

## SPECIAL PAPERS ON GENERAL METEOROLOGY.

## RECENT ADDITIONS TO THE WEATHER BUREAU LIBRARY.

C. FITZHUGH TALMAN, Junior Professor in Charge of Library.

The following have been selected from among the titles of books recently received as representing those most likely to be useful to Weather Bureau officials in their meteorological work and studies. Anonymous publications are indicated by a ——.

**Austria-Hungary. K. k. hydrographischer Dienst in Oesterreich.**

Wochenberichte über die Schneebeobachtungen im oesterreichischen Weichsel-, Dniestr-, Dniepr-, Pruth-, und Serethgebiete, 1911/12. [Lemberg. 1912.] 27 p. f°.

Wochenberichte über die Schneebeobachtungen im oesterreichischen Rhein-, Donau-, Oder-, und Adriagebiete, 1911/12. Wien. 1912. 57 p. f°.

Wochenberichte über die Schneebeobachtungen im oesterreichischen Elbegebiete und im böhmischen Donau- und Odergebiete, 1911/12. Prag. 1912. 21 p. f°.

**Austria-Hungary. K. k. Kriegsmarine, Pola.**

Jahrbuch der meteorologischen, erdmagnetischen und seismischen Beobachtungen, 1911. Pola. 1912. xxiv, 176 p. f°.

**Barnes, Howard T.**

Icebergs and their location in navigation. [London. 1912.] 20 p. 8°. (Royal institution of Great Britain. [Publication])

**Benedict, Francis G[ano].**

The composition of the atmosphere, with special reference to its oxygen content. Washington. 1912. iii, 115 p. 8°. (Carnegie institution of Washington. Publication no. 166.)

**Bologna. Università. Osservatorio.**

Osservazioni meteorologiche dell' annata 1911. Bologna. 1912. 31 p. f°.

**Brückner, Eduard.**

Klimaschwankungen und Völkerwanderungen im XIX. Jahrhundert. [Berlin. 1910.] 15 p. 4°. (Reprint: Internat. Wochenschr. f. Wissensch., Kunst u. Technik, Berlin, 1910, 5. März.)

**Coburg. Verein für Wetterkunde.**

29. Jahresbericht, 1911. [Coburg. 1912.] 16 p. plates. 8°.

**Defant, A[bert].**

Die Veränderungen in der allgemeinen Zirkulation der Atmosphäre in den gemäßigten Breiten der Erde. Wien. 1912. 208 p. 8°. (Reprint: Sitzber. Akad. d. Wiss., Wien, Math.-Naturw. Kl. Bd. 121, Abth. 2a, März, 1912.)

**Delrock, Ch.**

Astronomie et météorologie à la portée de tous. 3me éd. Bruxelles. 1893. 176 p. 8°.

**Dickson, H. N.**

Climate and weather. London, n.d. 256 p. 16°. (Home university library of modern knowledge.)

**Elderton, W. Palin.**

Frequency-curves and correlation. London. [1906.] xiii, 172 p. 8°. (Published for the Institute of Actuaries.)

**Fleming, J. A.**

Waves and ripples in water, air, and aether. 2d issue, rev. London. 1912. xii, 299 p. 12°.

**Fowler, G. Herbert. editor.**

Science of the sea, an elementary handbook of practical oceanography. London. 1912. xviii, 452 p. 8°. (Prepared by the Challenger Society.)

**Gagelmann, Friedrich [Wilhelm Theodor].**

Die sommerlichen Regengebiete in West- und Mitteleuropa. Frankfurt a/M. 1912. 40 p. 4°. (Diss.—Giessen.)

**Great Britain. Advisory committee for aeronautics.**

Technical report for the year 1911-12, (with appendices). London. 1912. 323 p. 8°.

**Great Britain. Meteorological committee.**

Seventh annual report, for the year ended 31st March 1912. London. 1912. 173 p. 8°.

**Hamburg. Deutsche Seewarte.**

Ergebnisse der meteorologischen Beobachtungen im Systeme der Deutschen Seewarte für das Lustrum 1906-1910. Hamburg. 1912. 10 p. f°.

**Japan. Central meteorological observatory.**

Annual report, for 1911. Pt. I. Meteorological observations in Japan. Tokio. 1912. 397 p. 4°.

**Mizusawa. International latitude observatory.**

Annual report of the meteorological and the seismological observations, for the year 1911. With appendix, General mean of the meteorological observations during 1902-1911. Mizusawa. 1912. 47 p. 4°.

**New Zealand. Meteorological office.**

Meteorology [for the year 1911.] n. p. [1912.] f°. (Reprint: Statistics of New Zealand for the year 1911, p. 375-384.)

**Peppler, Albert.**

Aerologische Studien über Zyklonen und Antizyklonen. Leipzig. 1912. [2]. 62 p. 4°. (Inaug diss.—Giessen.)

**Plummer, Fred G.**

Forest fires: their causes, extent and effects, with a summary of recorded destruction and loss. Washington. 1912. 39 p. 8°. (U. S. Forest service. Bull. 117.) [Discusses meteorological relations of forest fires; "dark days," dry fog, Indian summer, etc.]

**Prussia. Landesanstalt für Gewässerkunde.**

Jahrbuch für die Gewässerkunde Norddeutschlands, Abflussjahr 1910. Berlin. 1912. var. pag. f°.

**Ridgley, Douglas C.**

General circulation of the atmosphere. Normal, Ill. [c1910.] 27 p. 12°. (Geographical pamphlet series.)

Rainfall of the earth. Normal, Ill. [c1910.] 30 p. 12°. (Geographical pamphlet series.)

**Straits Settlements.**

Meteorological returns, for the year 1910. Singapore. 1912. 21, [120] p. f°.

**Trieste. I. r. osservatorio marittimo.**

Rapporto annuale per l'anno 1908, v. 25. Trieste. 1912. [4], 123 p. f°.

**U. S. Department of agriculture. Library.**

Catalogue of publications relating to forestry in the library of the United States Department of agriculture. Washington. 1912. 302 p. 8°. (Bull. 76.) [Includes references on the influence of forests on climate and stream-flow.]

**Vageler, Paul.**

Die Bindung des atmosphärischen Stickstoffs in Natur und Technik. Braunschweig. 1908. ix, 132 p. 8°. (Die Wissenschaft, Heft 26.)

**Venice. Ufficio idrografico.**

Carta annuale delle piogge nella regione veneta per il 1911. Venezia. 1912. 44 p. 1 map. 4°.

**Württemberg. Königl. württemberg. meteorologische Zentralstation.**

Deutsches meteorologisches Jahrbuch für 1911, Württemberg. Stuttgart. 1912. 68 p. f°.

**Zi-ka-wei. Observatoire magnétique, météorologique et sismologique.**

Les cartes du temps de Zi-ka-wei et les moyennes mensuelles, par L. Froc. Chang-hai. [1912.] 5 p. f°. (Reprint: Zi-ka-wei. Bulletin météorologique de 1909, Appendice.)

## RECENT PAPERS BEARING ON METEOROLOGY

C. FITZHUGH TALMAN, Junior Professor in Charge of Library.

The subjoined titles have been selected from the contents of the periodicals and serials recently received in the Library of the Weather Bureau. The titles selected are of papers and other communications bearing on meteor

ology and cognate branches of science. This is not a complete index of the meteorological contents of all the journals from which it has been compiled. It shows only the articles that appear to the compiler likely to be of particular interest in connection with the work of the Weather Bureau. Unsigned articles are indicated by a —.

*American geographical society. Bulletin. New York. v. 44. October, 1912.*

**Arctowski, Henryk.** Studies on climate and crops. p. 745-760. *Country gentleman. Philadelphia. v. 77. October 26, 1912.*

— Potash as frost insurance. p. 9.

*Geographical society of Philadelphia. Bulletin. Philadelphia. v. 10. October, 1912.*

**Huntington, Ellsworth.** William Morris Davis, Geographer. p. 26-36, [with portrait]

*International institute of agriculture. Bureau of agricultural intelligence and of plant diseases. Bulletin. Rome. 3d year. September, 1912.*

— Methods for the study of agricultural meteorology. p. 1922-1926. [Abstracts of papers by Askinazy, Loske and Obsor.]

*Meteorological society of Japan. Journal. Tokyo. 31st year. July, 1912.*

**Tsuiji, Y.** Note on the application of the method of harmonic analysis. p. 1-9.

*Modern electrics. New York. v. 5. November, 1912.*

— Electric hygrometer. p. 802. [Abstract from article in Central Zeitung für Optik und Mechanik describing Pionchon's hygrometer.]

*Science. New York. v. 36. November 15, 1912.*

**Mitchell, A. J.** Winter weather in Florida. p. 675-677.

*Science progress. London. v. 6. January, 1912.*

**Shaw, W. N.** The structure of the atmosphere and the texture of air currents in relation to the problems of aviation. p. 345-371.

*Scientific American supplement. New York. v. 74. November 16, 1912.*

**Talman, C. Fitzhugh.** Solar and lunar halos. A description of principal varieties known to science. p. 308-309.

*Symons's meteorological magazine. London. v. 47. October, 1912.*

**Gold, Ernest.** Meteorology at the British Association, section A. p. 173-176. [Conference between Sections A and M on agricultural meteorology.]

**Bates, D. C.** Atmospheric disturbances and deep-sea fish. p. 180-181.

**Levis, Marc de.** The Vallot observatory on Mont Blanc. p. 184-185.

*Terrestrial magnetism and atmospheric electricity. Baltimore. v. 17. September, 1912.*

**Bauer, L. A.** The physical theory of the earth's magnetic and electric phenomena. p. 115-140.

*Belgium. Ministère des colonies. Bulletin agricole du Congo Belge. Bruxelles. v. 3. Sept. 1912.*

— Observations pluviométriques effectuées dans la colonie [1911]. p. 647-651.

— Observations météorologiques effectuées à la station d'Elisabethville (Katanga) [Oct. 1911-June 1912]. p. 669-679.

*Deutsche Luftfahrer Zeitschrift. Berlin. 16. Jahrgang. 24. Oktober 1912.*

**Borne, Georg v. dem.** Aneroidvariometer zur Feststellung der Vertikalgeschwindigkeit im Freiballon. p. 538.

**Weber, Leonhard.** Der Wetterdienst während des Nordmarkfluges. p. 540-541.

*Meteorologische Zeitschrift. Braunschweig. Band 29. Oktober 1912.*

**Machatschek, Fr[itz].** Zum Klima von Turkestan. p. 449-454.

**Türstig, R.** Verdunstung auf dem Nil bei Khartum. p. 454-462.

**Hann, Julius v.** Der tägliche Gang der Windstärke auf dem Gipfel des Ben Nevis und seine Bedeutung für die Theorie. p. 462-470.

**Humphreys, William Jackson.** Über das Erdlicht oder die Helligkeit des Mitternachtshimmel, ohne Sternlicht. p. 470-473. [Translated from Astrophysical journal.]

**Skreb, S[tjepan].** Die Häufigkeitskurven der jährlichen Niederschlagssummen. p. 473-475.

**Kassner, Carl.** Über einen Föhn in Bulgarien. p. 477-479.

**Konschegg, A.** Untersuchungsergebnisse über die Zusammensetzung der Atmosphäre während der Passage des Halley'schen Kometen im Jahre 1910. p. 480-481. [Spectroscopic examination of specimens of air collected during passage of Halley's comet showed no change of composition.]

**Köppen, Wladimir.** Zusammenhang der vertikalen Temperaturverteilung mit adiabatischen Änderungen der Lufttemperatur. p. 481-484.

**Hann, Julius v.** Über das Klima von Notre-Dame des Pins (Mandschurei). p. 486-488.

**Hahn, Friedrich.** Die atmosphärische Störung im Sommer 1912. p. 488-489.

*Österreichische Flug-Zeitschrift. Wien. 6. Jahrgang. 10. November 1912.*

**Rott, Leo.** Messung der Luftströmungen. p. 500-508.

*Zeitschrift für Balneologie. Berlin. 5. Jahrgang. 15. Oktober 1912.*

**Dalmady, Z. v.** Die klimatologische Berechnung der Schwüle. p. 409-416.

*Netherlands. Koninkl. Nederlandsch. meteorologisch. instituut. Mededelingen en Verhandelingen. Utrecht. 1912.*

**Van der Stok, J. P.** Das Klima des südostlichen Teiles der Nordsee, unweit der niederländischen Küste. p. 215-308. (No. 13c.)

**Everdingen, E. van.** De methode van beoordeeling der weersverwachtingen van het koninklijk Nederlandsch meteorologisch instituut en de uitkomsten in den zomer van 1911. p. 1-24. (No. 14.)

#### NOTE ON CLIMATOLOGICAL AVERAGES.

It has always been very difficult to clearly demonstrate either changes or agreements as to the climatic conditions of different localities, or of different periods and principally because of a want of homogeneity in the lengths of the periods or the faithfulness of the respective records of temperature, rainfall, cloudiness, etc. If the exposures of the instruments, the hours of observation, and the years of record are homogenous, and the individual observers themselves are not changed, then we may confidently hope that the resultant climatic averages will be strictly comparable.

Climates are the results of the action of meteorological influences for many years, and must be defined as the average for long periods of years. So many years must be considered in taking such averages that the addition of as many more years will not appreciably alter the figures. Thus, if 50.4° F. is the average temperature for the period 1750 to 1800, with an inherent reliability of plus or minus 0.3° depending upon the agreement of the 50 individual years among themselves, and if in a corresponding way we get 50.5° F. plus or minus 0.3° F. for the average of 1800 to 1850, and again get 50.6° F. plus or minus 0.3° F. for the average from 1850 to 1900, then we have 50.5° F. for the average of the whole three periods with a reliability of plus or minus 0.2° F. The reliability increases slowly with the length of record, unless we happen upon a 50-year period in which unusual extremes of temperature have occurred. Such unusual extremes force one to feel that the climate is more variable than usually thought and that averages are not quite so reliable as hoped for.

The reliability of an average or normal temperature, for instance, always depends upon two important factors; (1) the actual variations of temperature from year to year and, (2) the number of years taken into consideration. In order to find the "index of reliability" we simply compare the average for the 50 or 150 years with each individual annual figure; tabulate all the differences; take the average of these latter, regardless of the plus or minus signs, and multiply it by the proper factor in the following table. The result is the reliability of the average of all the years of record. These factors are quoted from page 25 of the last edition of Dr. Hann's Handbook of Climatology, but are probably given in many treatises on the "theory of probabilities" or "the laws of chance" or "the method of least squares."

Years of record.	Factor.
20	0.191
25	0.171
30	0.156
35	0.144
40	0.134
50	0.120
60	0.109
80	0.095
100	0.085